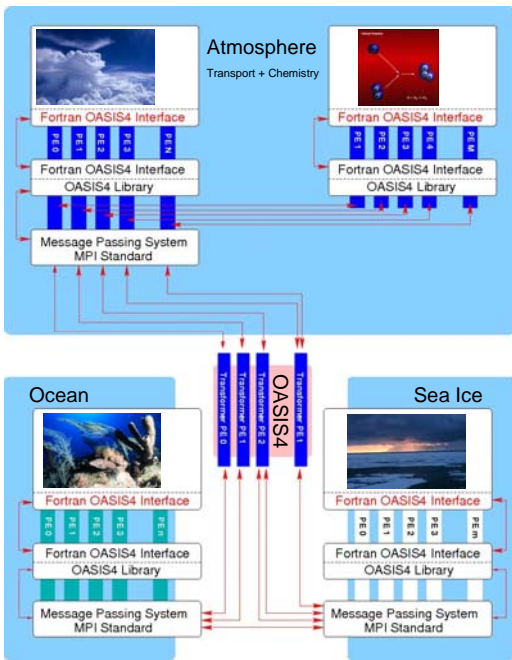


OASIS4: A Coupling Software for Next Generation Earth System Modelling

René Redler (1), Sophie Valcke (2) and Hubert Ritzdorf (3)

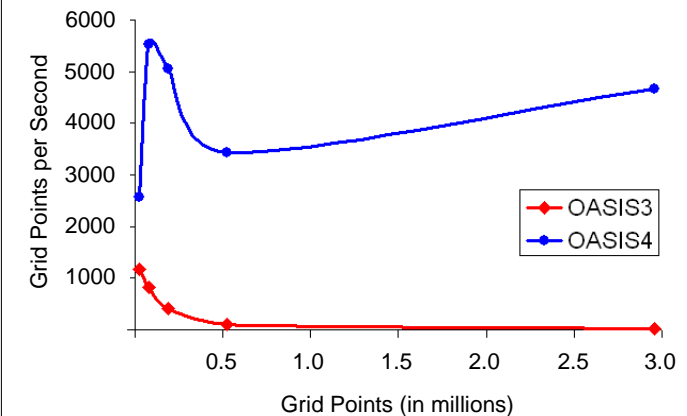


A software to couple ESM component codes:

- parallel MPI-based data exchange
- parallel & multigrid regridding search
- full support for parallel model components
- coupling to external files
- portable and scalable

OASIS4 Efficiency

- Only linear growth of cost with increasing problem size
- Parallel efficiency close to 1
- CPU costs for search in the order of seconds
- With OASIS3, the number of grid points that can be handled within one second decreases significantly for large grid sizes while it remains at a fairly high value with OASIS4.



OASIS4 Ingredients

- Driver/Transformer
- Library (PSMILe)
- GUI for XML configuration

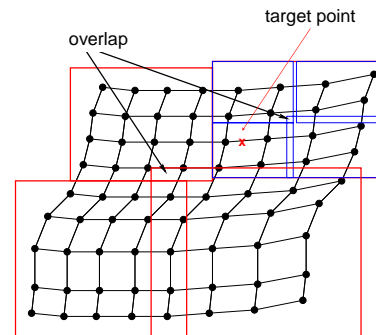
Supported grids

- 3D-regular
- horizontally irregular, vertical regular
- 3D-irregular
- Gauss-reduced
- index-grid

Supported interpolations

- 2D nearest-neighbour
- 3D nearest-neighbour
- Trilinear (3D)
- Bilinear (2D)
- Bicubic (2D)
- 2D conservative remapping

Multigrid regridding search



Reference

- R. Redler, S. Valcke and H. Ritzdorf, 2010: OASIS4 – a coupling software for next generation earth system modelling, Geosci. Model. Dev., 3, 87 – 104

Link

- <https://oasistrac.cerfacs.fr>

Use of OASIS4

- R. Döscher et al., 2010: Quantifying Arctic Contributions to Climate Predictability in a Regional Coupled Ocean-Ice-Atmosphere Model. Climate Dynamics, online, DOI:10.1007/s00382-009-0567-y.
- J. Flemming et al., 2009: Coupling global chemistry transport models to ECMWF's integrated forecast system, Geosci. Model Dev., 2, 253-265

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